

## New and noteworthy bird records from Belize

by Steve N. G. Howell, Barbara A. Dowell, Douglas A. James, Robert A. Behrstock & Chandler S. Robbins

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As with many areas of Central America, much remains to be learned about the birds of the small, newly independent country of Belize (formerly British Honduras). Russell (1964) summarized what was then known and a few authors have since added observations, most recently Wood *et al.* (1986) and Wood & Leberman (1987). The former work, however, listed, without reference or supportive documentation, at least 33 species previously unreported from Belize. The following observations represent significant new information concerning 48 species and one hybrid, including 11 species previously unreported from the country and 14 others uncritically listed by Wood *et al.* (1986). That 31 of the species discussed here were not recorded by Russell (1964) indicates the recent increase in observations in much of Belize.

This paper is based on a total of ten weeks Howell spent in Belize during June 1988, February 1990, February to April 1991, and January to February 1992, accompanied during some of the last two trips by Berhstock; on banding and censusing work in Belize in 1983 and from 1987 to 1991 by Dowell and Robbins; and on seven 1–2 week field trips between 1985 and 1991, plus a year's residence in Belize from September 1988 to September 1989, by James. During 24–29 August 1989, James participated in the "Doyle's Delight" expedition to an unexplored area of the southern Maya Mountains at the border of Cayo and Toledo districts. Camp was made at 1060 m elevation in the Snake Creek headlands, the 1142 m summit of which is at approximately 16°30'N, 89°03'W. This is 22 m higher than Victoria Peak in the Cockscomb Mountains, previously considered the highest point in Belize.

Records of particular authors are indicated by their initials, and are supplemented by records kindly contributed by other observers (indicated by their initials) listed under Acknowledgements. NB indicates species previously unreported from Belize; NBW indicates species new to Belize for which specific details could not be traced to support their inclusion by Wood *et al.* (1986); NR indicates additional species not reported by Russell (1964).

### MANX SHEARWATER *Puffinus puffinus*

A recently washed-up corpse was found along the beach about one half mile north of Dangriga, Stann Creek District, on 9 Feb 1990 (CSR); the remains (head and wing) have been deposited at the U.S. National Museum of Natural History. NB.

### FULVOUS WHISTLING-DUCK *Dendrocygna bicolor*

RGW observed a group of 20 birds in loose association with 500 Black-bellied Whistling-Ducks (*D. autumnalis*) at Crooked Tree Wildlife Sanctuary, Belize District, on 23 Apr 1990. This nomadic species is a rare

visitor to the Yucatan Peninsula (Ornat *et al.* 1989, SNGH, pers. obs.), and that it should occur in Belize from time to time is not surprising. NB.

**SNOW GOOSE** *Chen caerulescens*

A white morph bird at Tres Leguas, Orange Walk District, 29 Jan to 12 Feb 1991 (CSR) is the second record for Belize. The first, noted without reference by Wood *et al.* (1986), is a specimen collected in Nov 1975 and deposited at the American Museum of Natural History. NR.

**MASKED DUCK** *Oxyura dominicensis*

MEG and BGP saw an alternate-plumaged male on a small pond between Cristo Rey and San Antonio, Cayo District, on 18 Mar 1990, the first record for the southern half of Belize. Wood *et al.* (1986) considered this species a rare resident in northern Belize. NR.

**DOUBLE-TOOTHED KITE** *Harpagus bidentatus*

On Ambergris Cay, RAB and SNGH saw two separate adult Double-toothed Kites on 12 Feb 1992; the birds were studied and photographed down to ranges of 5 m. This record is remarkable in that Double-toothed Kites typically are residents of humid forest (mostly rain forest), not of scrubby woodland and mangroves. Wood *et al.* (1986) considered the species a rare resident only of the southern hardwood forests, but it is fairly common in hardwood forests throughout Belize (SNGH).

**SHARP-SHINNED HAWK** *Accipiter striatus*

SNGH saw an immature 5 km south of San Ignacio, Cayo District, on 6 Feb 1990, and another at Guacamallo Bridge, Cayo District, on 6 Feb 1991. Singles were mist-netted at Parrot's Wood, Belize District, on 11 Feb 1983, near Pomona, Stann Creek District, 25 Jan 1990, and near Gallon Jug, Orange Walk District, 23 Jan 1991 (BAD, CSR). These records indicate that the species is a widespread but uncommon winter visitor in Belize. Wood *et al.* (1986) indicated "five or fewer records" in the northern hardwood forests and coastal savannas of Belize. NR.

**COOPER'S HAWK** *Accipiter cooperi*

One mist-netted near Pomona on 12 Jan 1990 (BAD, CSR), an immature 6.5 km south of San Ignacio on 7 Feb 1990 (SNGH) and an adult at Maya Center, Stann Creek District, on 4 Feb 1991 (SNGH) represent the first records of this species in the southern half of Belize. Reported by Wood *et al.* (1986) only from the northern hardwood forests ("five or fewer records"). NR.

**BROAD-WINGED HAWK** *Buteo platypterus*

An immature near San Antonio, Cayo District, on 6 Feb 1990 (SNGH), an adult at Hidden Valley Falls, Cayo District, on 20 Mar 1991 (SNGH), and an adult 3 km north of Steadfast Village, Stann Creek District, on 4 Feb 1992 (RAB, SNGH) support the status of this species as a winter resident in southern Belize. An immature carefully studied, heard, and photographed at Ambergris Cay, 11–13 Feb 1992 (RAB, SNGH), presumably represents a vagrant. There are two previous Belize records (Russell 1964, Wood & Leberman 1987).

**ZONE-TAILED HAWK** *Buteo albonotatus*

Single adults were seen along the Hummingbird Highway at the Hershey Cacao plantation, 18 Jan 1988, and one mile south of Belmopan, 8 Mar 1988 (K. S. Anderson, pers. comm.). As in the Yucatan Peninsula (Ornat *et al.* 1989) this species has likely been overlooked as a winter visitor to Belize. NB.

**ORANGE-BREASTED FALCON** *Falco deiroleucus*

A pair at Hidden Valley Falls on 20 and 27 March 1991 (RAB, SNGH) was seen copulating on the former date, and on both dates the female was observed flying to a presumed nest cavity in spectacular cliffs near the waterfall. The pair was also present in February 1992 (RAB, SNGH). This pair was first noted at Hidden Valley in 1989 (EB) and represents one of the few Belize records of this rare species (Haney 1983, Wood & Leberman 1987). NR.

**SINGING QUAIL** *Dactylortyx thoracicus*

SNGH heard the distinctive, far-carrying "song" of this species (at least 3–4 individuals) along the Macal River, 6.5 km south of San Ignacio on 31 Jan and 5–7 Feb 1990, and 5–7 Feb and 26–28 Mar 1991, representing the first records of Singing Quail for southern Belize. "Five or fewer records" noted by Wood *et al.* (1986) for the northern hardwood forests. NR.

**GREY-BREASTED CRAKE** *Laterallus exilis*

One was mist-netted near Blue Creek Village, Toledo District, on 11 Jan 1989 (BAD). Single Grey-breasted Crakes were hand-caught by JB during the mowing of a damp meadow at Monkey Bay Wildlife Sanctuary, Belize District, in Apr 1989 (photographed) and Nov 1990. Also in Nov 1990, several very small crake chicks were observed at Monkey Bay, either of this species or of Ruddy Crake (*L. ruber*). These represent the second to fourth documented occurrences from Belize, the first being in Mar 1964 (Russell 1966), a record overlooked by Wood *et al.* (1986). NR.

**BLACK RAIL** *Laterallus jamaicensis*

A Black Rail called its *kii kii durr* song persistently between 19.00 and 21.00 h at Monkey Bay Wildlife Sanctuary, 27–29 Jan 1992 (SNGH, IK). The bird was tape-recorded at ranges down to 2 m but could not be seen in the dense, dry savanna grass it called from. There are two previous Belize records, most recently in 1963 (Russell 1964, 1966).

**UNIFORM CRAKE** *Amaurolimnas concolor*

On 20 Mar 1991, DAJ and ten other observers watched a Uniform Crake foraging for an hour along the bank of a stream in the Cockscomb Basin Jaguar Preserve, Stann Creek District. Russell (1964) listed only two previous Belize records, the most recent in 1935.

**AMERICAN OYSTERCATCHER** *Haematopus palliatus*

One at Dangriga on 4–9 Feb 1990 (BAD, SNGH, CSR) is apparently only the second Belize record (Wood *et al.* 1986). NR.

**LONG-BILLED CURLEW** *Numenius americanus*

RAB and SNGH studied a Long-billed Curlew, at times in direct comparison with 3 Whimbrels (*N. phaeopus*) at Commerce Bight, 2 km



south of Dangriga, Stann Creek District, on 4 Feb 1992. There is one previous published Belize record (Wood & Leberman 1987); no data support the species' status as a rare transient, as indicated by Wood *et al.* (1986). NR.

**DUNLIN** *Calidris alpina*

MEG and BGP observed three Dunlin at Commerce Bight on 21 Mar 1990. Wood *et al.* (1986) noted "five or fewer" records from the northern half of Belize but no data appear to support this statement. NBW.

**POMARINE JAEGER** *Stercorarius pomarinus*

MEG and BGP observed and photographed an adult and immature off the beach at Commerce Bight on 22 Mar 1990. SNGH has found Pomarine to be commoner than Parasitic Jaeger (*S. parasiticus*) off the Yucatan Peninsula in winter so its occurrence in Belize is not surprising. NB.

**PARASITIC JAEGER** *Stercorarius parasiticus*

One first-winter bird observed for an hour flying around the Belize City waterfront, Belize District, 23 Mar 1991 (RAB, SNGH), apparently represents the second record for Belize (cf. Wood *et al.* 1986). NR.

**GREAT BLACK-BACKED GULL** *Larus marinus*

DAJ and WC observed and photographed a first-winter bird, in the company of Herring Gulls (*L. argentatus*) and Laughing (*L. atricilla*) Gulls, at Belize City on 11–12 Jan 1989. The source of the record noted by Wood *et al.* (1986) cannot be traced (D. S. Wood & D. Weyer, pers. comm.) and this thus represents the first documented occurrence of Great Black-backed Gull in Middle America. This species has been increasing in eastern North America and has occurred regularly along the United States Gulf of Mexico coast dating from the 1970s (Duncan 1981). NBW.

**WHITE-CROWNED PIGEON** *Columba leucocephala*

RAB and SNGH saw one at Commerce Bight, 24 Mar 1991, and RAB saw one there, 4 Feb 1992, the second and third mainland Belize records of this Caribbean species (cf. Russell 1964). In adjacent Quintana Roo, Mexico, White-crowned Pigeons are regular and seasonally common visitors to the mainland from nesting islands offshore, and the same may be true in Belize.

**PHEASANT CUCKOO** *Dromococcyx phasianellus*

Singles heard at Xunantunich, Cayo District, on 31 Jan 1990 (SNGH), and 6.5 km south of San Ignacio, 6 Feb 1992 (RAB, SNGH) appear to represent only the third and fourth Belize records of this secretive species (cf. Wood *et al.* 1986). NR.

**SMOOTH-BILLED ANI** *Crotophaga ani*

On Ambergris Cay, Corozal District, one on 13 Feb 1990 (SNGH, photographed by D. Hoffman) and at least two on 13 Feb 1991 (SNGH) were all in the company of groups of the noticeably smaller Groove-billed Ani (*C. sulcirostris*); a lone bird was seen there on 12 Feb 1992 (RAB, SNGH). Russell (1964) listed one specimen, apparently now lost, from Belize, and Pelzl (1969) reported sightings from Northern Cay.

**STYGIAN OWL** *Asio stygius*

One roosted in pine savanna near the Belize Zoo, Belize District, during Jun 1989 (AB, DAJ, DW). SNGH observed and tape-recorded a courting pair at Hidden Valley Falls the night of 19 Mar 1991. There are few previous Belize records of this little-known species, and only one other for the Mountain Pine Ridge, an area for which Wood *et al.* (1986) overlooked Russell's (1964) specimen record.

**STRIPED OWL** *Asio clamator*

One studied by a tour group at Dangriga, 9 Mar 1988 (K. S. Anderson, pers. comm.), appears to be the first confirmed record for Belize, since the source for this species' inclusion by Wood *et al.* (1986) cannot be traced (D. S. Wood, pers. comm.). NBW.

**YUCATAN POORWILL** *Nyctiphrynus yucatanicus*

SNGH heard up to three Yucatan Poorwills, giving their distinctive *will* call, 6.5 km south of San Ignacio on 5–8 Feb 1990 (also one seen), 6–8 Feb 1991, and 27–29 Mar 1991. These represent the southernmost records of this Yucatan endemic. Russell (1964) reported only one specimen and a few sightings from northern Belize. The reports of Wood *et al.* (1986) from the coastal savannas, however, are based on birds misidentified by voice (D. Weyer, pers. comm.); see Pierson (1986) and Howell (1990) for clarification of the vocalisations attributed to this species and *Caprimulgus badius*, the Yucatan Nightjar.

**SWIFT SP.** *Cypseloides* sp.

At least 14 swifts seen and heard high overhead at Hidden Valley Falls, 19 Mar 1991 (SNGH), could not be identified to species but were clearly referable to the genus *Cypseloides*. Overall they resembled the Black Swift *C. niger*, a species not known from Belize. Their calls, however, did not sound like those of Black Swift nor of the smaller Chestnut-collared Swift *C. rutilus*. They may have been White-chinned Swifts *C. cryptus*, a little-known species that has been found once in Belize (Russell 1964).

**BAND-TAILED BARBTHROAT** *Threnetes ruckeri*

One mist-netted at the Cockscomb Basin Jaguar Preserve, on 19 Feb 1990 (BAD, CSR), is the northernmost record for this striking hummingbird, being some 75 km north of previous records in southernmost Belize (Barlow *et al.* 1972, Wood & Leberman 1987). NR.

**STRIPE-TAILED HUMMINGBIRD** *Eupherusa eximia*

Stripe-tailed Hummingbirds were fairly common at the Doyle's Delight expedition camp, 20–24 Aug 1989, including a female being followed by a newly-fledged begging juvenile (WC, DAJ, SM, MM). This species was known in Belize only from the Cockscomb Mountains (Russell 1964).

**SPECTACLED FOLIAGE-GLANER** *Anabacerthia variegaticeps*

This species appeared to be fairly common at the Doyle's Delight expedition camp: DAJ and MM saw two on 20 Aug 1989, and several others were seen after that date (SM, MM). NB.

**BARE-CROWNED ANTBIRD** *Gymnocichla nudiceps*

A male and female were mist-netted at Blue Creek, Toledo District, on 21 Jan 1989 (BAD, CSR). The only previous records from Belize are those of Wood & Leberman (1987). NR.

**CARIBBEAN ELAENIA** *Elaenia martinica*

One on Ambergris Cay, 13 Feb 1990 (SNGH), at least one there on 6–7 Feb 1991 (MEG, BGP), three on 13–14 Feb 1991 (SNGH), two on 3–4 Apr 1991 (RAB, SNGH), and one on 12 Feb 1992 (RAB, SNGH) suggest the species has been overlooked on some of the inner Belize cays. Caribbean Elaenias have also been reported recently from mainland Quintana Roo (Ornat *et al.* 1989) where they may be present only in winter. The Ambergris birds may also be wintering migrants from the Caribbean although Bond (1985) did not indicate that the species shows any migratory tendencies. On Ambergris, *E. martinica* is sympatric with the commoner Yellow-bellied Elaenia *E. flavogaster* but favours scrubby woodland while *flavogaster* prefers more open areas. In Belize, Caribbean Elaenias have been reported only from offshore keys, namely Glover's Reef and Lighthouse Reef (Russell 1964, Pelzl 1969).

**GREY KINGBIRD** *Tyrannus dominicensis*

BW and DS observed and photographed a Grey Kingbird in Belize City, Belize District, on 3 Apr 1989. DAJ and party found and photographed one in Belize City on 17 Mar 1991; the bird was still present on 23 Mar (RAB, SNGH). NB.

**WHITE-WINGED BECARD** *Pachyramphus polychopterus*

An immature male was mist-netted and photographed near Gallon Jug on 24 Jan 1991 (BAD, CSR). The only previous records for Belize, all from the southern half of the country, are those of Wood & Leberman (1987). NR.

**CAROLINA (WHITE-BROWED) WREN** *Thryothorus ludovicianus*

On 28 Mar 1991, RAB and SNGH heard and saw a White-browed Wren singing 6.5 km south of San Ignacio. The bird was in dense deciduous woodland at 120 m elevation near the west bank of the Macal River. This species was listed as a permanent resident with "five or fewer records" from both northern and southern hardwood forests by Wood *et al.* (1986), and reported from Belize by the A.O.U. (1983). Phillips (1986), however, found no Belize records, and the source of the A.O.U. and Belize Checklist citations is unclear (B. L. Monroe, Jr., pers. comm., and D. S. Wood, pers. comm., respectively). NBW.

**SLATE-COLOURED SOLITAIRE** *Myadestes unicolor*

This species was common at and above the Doyle's Delight expedition camp, 20–24 Aug 1989 (WC, DAJ, SM, MM). In addition, SNGH tape-recorded a singing individual, presumably an altitudinal migrant (elevation about 150 m), at Milepost 39 on the Hummingbird Highway, Cayo District, 2 Feb 1990. Previous records from Belize were all from the Cockscomb Mountains (Russell 1964).



**BREWSTER'S WARBLER** *Vermivora pinus* × *V. chrysoptera*

PR observed an individual of this distinctive hybrid at Windy Hill, between San Ignacio and Benque Viejo, Cayo District, on 19 Mar 1988. The only other record from northern Central America is a recent observation from Guatemala (Howell & Webb 1992). NB.

**VIRGINIA'S WARBLER** *Vermivora virginiae*

DAJ and three others watched a Virginia's Warbler foraging for 30 minutes at Baker's Ranch (about 20 km northwest of Belize City), Belize District, on 18 Dec 1988. On 16 Mar 1989, JGE and a tour group carefully studied a Virginia's Warbler in coastal scrub at Dangriga. These records together with one reported in February 1977 near Lake Peten Itza in northern Guatemala (Beavers *et al.* 1991) suggest a pattern of vagrancy for this species which normally winters in southwest Mexico. NB.

**SHINING HONEYCREEPER** *Catherpes lucidus*

DAJ and MM saw a male near the Doyle's Delight expedition camp on 22 Aug 1989. This is another species previously known in Belize only from the Cockscomb Mountains (Russell 1964).

**BLUE-HOODED EUPHONIA** *Euphonia elegantissima*

DAJ and party saw three Blue-hooded Euphonias near the Doyle's Delight expedition camp on 21 Aug 1991. There is one previous record for Belize (Russell 1964).

**COMMON BUSH-TANAGER** *Chlorospingus ophthalmicus*

Common Bush-Tanagers were common at and above the Doyle's Delight expedition camp, 20–23 Aug 1989 (WC, DAJ, SM, MM). The only previous record from Belize is from the Cockscomb Mountains (Russell 1964).

**SLATE-COLOURED SEEDEATER** *Sporophila schistacea*

A male was mist-netted and photographed at Blue Creek, Toledo District, on 28 Jan 1989 (BAD, CSR). In addition, JGE and a tour group observed and photographed a male (and also probably saw two females) in association with bamboo at Chan Chich, Orange Walk District, 12 Mar 1991, and DS observed a male, an immature male, and three females, also at Chan Chich, on 1 May 1991. This nomadic species appears to be expanding its range in Central America; it has invaded the Caribbean Slope of Costa Rica since about 1975 (Stiles & Skutch 1989) and was first recorded in Honduras in 1979 (Marcus 1983). NB.

**BLUE SEEDEATER** *Amaurospiza concolor*

At Monkey Bay Wildlife Sanctuary, one male on 1 Feb 1991 (SNGH), at least seven individuals on 3 Feb 1991 (SNGH, singing males tape-recorded), a pair on 21 and 24 Mar 1991 (RAB, SNGH; photographed on the last date) and 3–4 birds, including a pair and another singing male, on 2 Feb 1991 (RAB, SNGH). All birds were associated with seeding bamboo. In addition, a male was mist-netted at Bermuda Landing, Belize District, on 24 Feb 1991 (CSR). These records are remarkable not only in that there appear to be no records from neighbouring Guatemala (A.O.U. 1983), but that elsewhere in its range from Mexico to South America the

species occurs in highlands and foothills (A.O.U. 1983, Monroe 1968, Ridgely & Gwynne 1989, Ridgely & Tudor 1989, Stiles & Skutch 1989, Thurber *et al.* 1987). NB.

**YELLOW-FACED GRASSQUIT** *Tiaris olivacea*

In 1990, MEG and BGP noted a male 6.5 km south of San Ignacio, 17 Mar, and at least two pairs between Cristo Rey and San Antonio, 18 Mar. In 1991, RAB and SNGH saw single males at Milepost 39 on the Hummingbird Highway, Cayo District, on 26 Mar, and near San Antonio, 27 Mar. In 1992, RAB and SNGH saw two males 6.5 km south of San Ignacio on 6 Feb. The source of the only previous Belize record (Wood *et al.* 1986) cannot be traced (D. S. Wood, pers. comm., W. F. Young, pers. comm.). Yellow-faced Grassquits occur locally in Guatemala and in the Yucatan Peninsula; increased deforestation may be helping the species spread into southern Belize or it may simply have been overlooked there in the past. NBW.

**LINCOLN'S SPARROW** *Melospiza lincolni*

ST observed a Lincoln's Sparrow at Ambergris Cay on 13 Feb 1990. There are only two other records from Belize, both in March (Russell 1964).

**WHITE-CROWNED SPARROW** *Zonotrichia leucophrys*

On 28 Oct 1988, at Ambergris Cay, DAJ found an immature White-crowned Sparrow foraging with a mixed-species flock that included Grey Catbirds *Dumetella carolinensis* and Indigo Buntings *Passerina cyanea*. White-crowned Sparrows occur as rare, overshooting autumn migrants in Mexico's Yucatan Peninsula, mostly from mid-Oct to Nov (Howell 1989, SNGH, pers. obs.). NB.

**ORANGE ORIOLE** *Icterus auratus*

At Ambergris Cay, SNGH saw an adult male (photographed by D. Hoffman) and female on 12 Feb 1990, an immature male and immature female on 13 Feb 1991, and RAB and SNGH saw an adult male and female on 12 Feb 1992. Previously the species has been considered endemic to Mexico's Yucatan Peninsula (A.O.U. 1983) although it has been collected at Chetumal (Paynter 1955), immediately adjacent to Belize. That none was found on Ambergris during 2–4 Apr 1991, despite careful searching, suggests the species may be only a winter visitor there. NB.

**YELLOW-BACKED ORIOLE** *Icterus chrysater*

This species was fairly common in scrubby woodland and coconut palms (*Cocos nucifera*) on Ambergris Cay in Jan and Feb 1990, Apr 1991, and Feb 1992 (RAB, SNGH). There are no previous reports from the Belize cays and all other Belize records are from pinelands (Russell 1964).

**HOUSE SPARROW** *Passer domesticus*

DAJ noted a roosting group of 15 at Punta Gorda, Toledo District, on 20 Dec 1988, SNGH saw a male and two females at Dangriga on 1 Feb 1990, and CSR saw at least one at Punta Gorda on 3 Feb 1990. Wood *et al.* (1986) noted "five or fewer records" from "cities" in the coastal areas.



Although House Sparrows have pushed south as far as central Panama (Ridgely & Gwynne 1989), why they have not colonised the Yucatan Peninsula (and Belize) is unknown. NR.

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## Departure behaviour of night migrants in the eastern Sahara

by J. S. Ash

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During an investigation in 1986 into the migration of Palearctic birds at Wadi Halfa (21°53'N, 31°19'E) in the northern Sudan, undertaken by an ICBP supported expedition in cooperation with the Wildlife Conservation Forces of the Sudan, I spent some time observing the departure of migrants on nocturnal flights. The chosen site was on the eastern shore of Lake Nasser on the River Nile's route through the Sahara, where areas of tamarisk *Tamarix* sp. scrub 1.5–2.0 m high are mostly not dense enough to be inaccessible on foot. As the waters of the lake rose in September this scrub became increasingly flooded.

Every day there were large numbers of migrants in the scrub. Most, if not all of them, arrived during the previous night from c. 24.00 h onwards, with a peak fall-out at c. 40 minutes before sunrise. They apparently spent the daylight hours in the scrub, and from the amount of activity seen, most, if not all of them, spent their time feeding or looking for food. A sample of over 6000 of the Palearctic migrants netted were ringed. Of these, 93% comprised three species, Reed Warblers *Acrocephalus scirpaceus* 59%, Lesser Whitethroats *Sylvia curruca* 24% and Sedge Warblers *A. schoenobaenus* 10%. All the migrants caught were in good condition and carried sufficient fat to enable them to complete the desert crossing (Nikolaus in prep.).

Around sunset (at 17.56 h on 15 September) there was either marked reduction in activity among the migrants, or else they became less visible, and at first it was thought that this was perhaps due to their departure on migratory flight. Further investigation, however, revealed that the birds were still present but in a relatively inactive or quiescent state. At 34–57 minutes after sunset they departed individually in rapid ascent into the